

1. The 1891 invention of the escalator has helped to move a lot of people up and down over the years. The world's longest escalator system (in Hong Kong) is 800 meters. Convert this measurement to feet.

2. Is the expression simplified correctly?

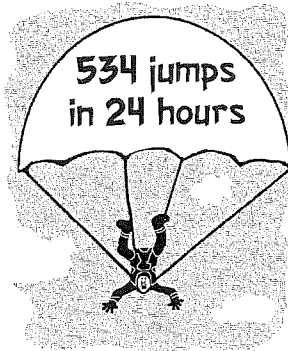
$$\frac{(x^4 \cdot x^3)}{x^2} = x^7 + x$$

3. Use words to write the expression:

$$x^2 \sqrt{12}$$

4. Solve:

$$\frac{2x-3}{2} + \frac{x+6}{8} = \frac{5x-6}{8}$$



5. The parachute was invented in 1785. In 2003, Jay Stokes of the U.S. set a record for the most parachute jumps in 24 hours. In that time period, he jumped 534 times.

- About how much time, on average, was needed for each jump?
- If he could continue at the same rate, about how long would it take him to make 1,000 jumps?

1. Simplify: $|12| - |-8| + |-6|$

2. Which examples show correct factoring?

- $x^2 - 2x$; $x(x - 2)$
- $y^2 + 2y + 1$, $(y + 1)(y - 1)$
- $x^2 + 2x + 5x + 10$ $(x + 4)(x + 5)$
- $x^2 - y^2$ $(x + y)(x - y)$

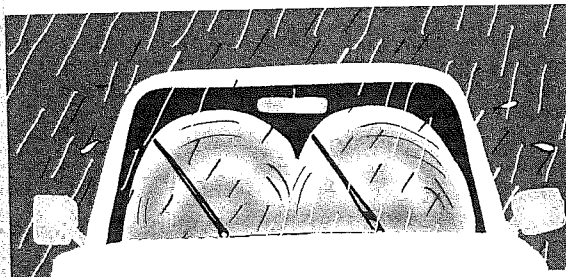
3. Simplify the inequality:

$$-6 - 4(x + 2) \leq 10x$$

4. The piano, a 1709 invention, has keys of two colors. The total number of keys is 88. The number of black keys is ten more than half the number of white keys.

HOW MANY KEYS ARE WHITE?

5. Driving in a bad storm, Charlie was grateful for the 1903 invention of windshield wipers. When he started them up, he counted 235 sweeps (both directions) in the first 2 minutes. At that rate, how many sweeps of the wipers could he expect during the entire 2-hour drive?



Name _____

1. The pencil is one invention used and sold all over the world. Residents in the United States buy twenty million pencils a year.

Write this number in scientific notation.

2. What is the HCF (highest common factor) of the terms in this expression?

$$-p^2(q-2) + (q-2)^2$$

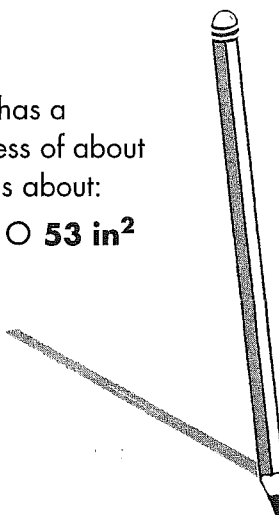
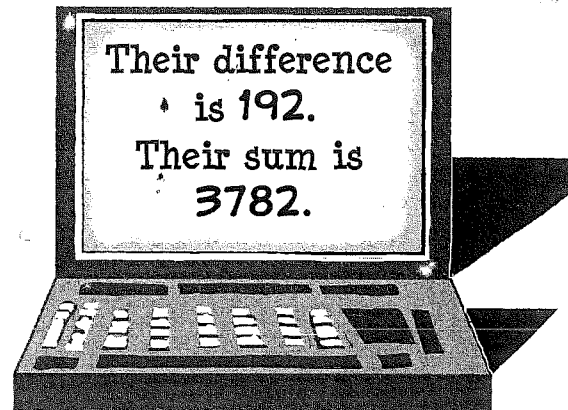
3. The compact disc, invented in 1972, has a diameter of 4.75 inches and a thickness of about 0.06 inch. The surface area of a CD is about:

○ 17 in² ○ 36 in² ○ 36 in³ ○ 53 in²

4. How many *like* terms are in this expression?

$$8x^2 - 2x^3 + 5x - x^2 + y^2 - 9$$

5. Though they were invented many years apart, the pencil and the laptop computer are both tools that help writers accomplish their tasks. Follow the clues below to find the year each of these amazing instruments was invented.



Name _____

1. Fifteen-year old Richie Stanchowski took some money $[(5 \cdot 46) + 32]$ dollars from his savings and put it to work. He bought supplies to create an invention called a Water Talkie. Now, kids all over the world can use the toy to hold underwater conversations.

What is this amount of money?

2. Find the next three terms in the sequence:

18, 32, 46, 60, 74, ...

_____, _____, _____, _____

3. Evaluate each expression.

12^0

4^{-3}

12^1

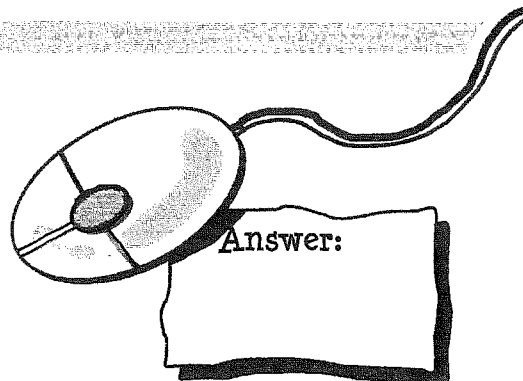
5^{-2}

4. Subtract:

$$-b^4 + 3b - 2b^2 + 7 \text{ from } 5b^2 + 5b + 9 + 2b^4$$

5. The computer mouse was invented in 1988. Last week, Shana found a great sale on one of the newest versions of this invention (a hot pink cordless mouse) on sale. The original price was \$29.00. She paid \$24.36. This total included 5% sales tax.

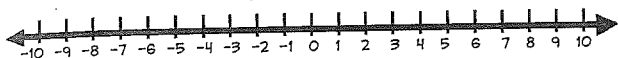
What was the *discount* on the mouse?



Name _____

1. Is the inequality graphed correctly?

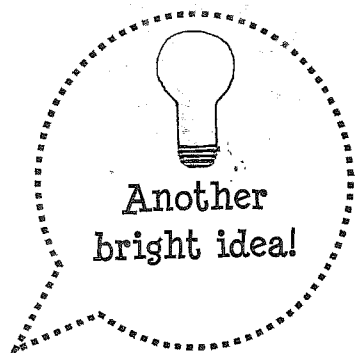
$$5 > x - 3$$



2. Luke shops for computer equipment. He has three color choices for the computer (black, silver, white), three choices for the monitor (black, silver, white), two choices for the keyboard color (silver, white), and four choices for the mouse (white, silver, red, black). How many different color combinations of the four items are possible?

3. Find the slope and y-intercept for this line:

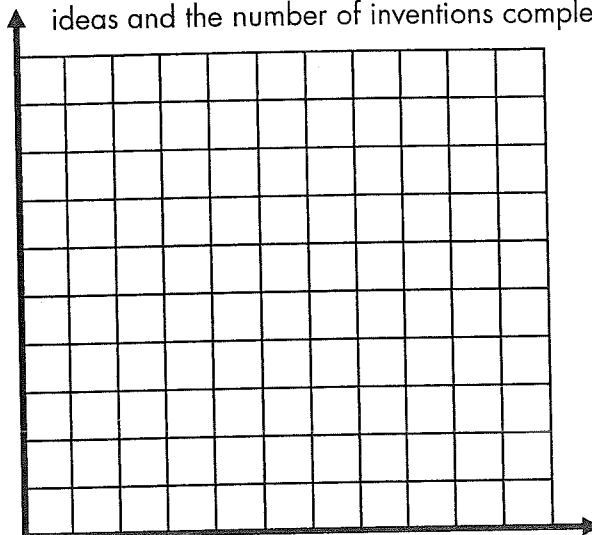
$$y + 0.5 = 0.6x$$



4.

NUMBER OF MONTHS	27	72	38	52	10	16	65	42	44	6
NUMBER OF INVENTIONS	15	90	30	44	21	19	65	50	81	10

Make a scatter plot of this data for the number of months each of ten inventors spent trying out ideas and the number of inventions completed.



5. Challenge Problem

Read the examples. Use the information to determine the year for each of the inventions.

Invention

Year

zipper

paper

DVD

dishwasher

Velcro

magnifying glass

helicopter

pop top can

cell phone

- The magnifying glass was invented 750 years before the turn of the 21st century.
- The sum of the zipper invention date and pop top can date is 3880.
- The dishwasher was invented one year less than a century and a decade before the DVD.
- Velcro was invented nine years after the helicopter.
- The pop top can was invented 1858 years after paper.
- The dishwasher came 5 decades and 3 years before the helicopter.
- The sum of Velcro and cell phone invention dates: 3927.
- The difference between dates of the DVD and the zipper inventions is 78 years.
- The invention of paper happened 20 years less than one-tenth the date of the magnifying glass.